

The secure computer system comprises at least one computer having a processor operating under the control of a program on input data that can be associated with a code and delivering output data for output members. A security peripheral that is external but connected to the processor is provided to receive at least the input data codes, the operands, and the nature of the operation of each elementary operation performed by the processor, a code being calculated on each elementary operation performed by the processor in order to verify proper performance of all or part of the executed program. The system is applicable to processes for automatically running rail track systems.